## **ABSTRACT**

1

This invention is a method of forming a nitride layer on at least one metal or metal alloy biomedical device, comprising: providing a vacuum chamber with at least one biomedical device positioned thereon on a worktable within the vacuum chamber; reducing the pressure in the vacuum chamber; introducing nitrogen into the vacuum chamber so that the pressure in the vacuum chamber is about 0.01 to about 10 milli-Torr; generating electrons within the vacuum chamber to form positively charged nitrogen ions; providing a negative bias to the worktable so that the positively charged nitrogen ions contact the biomedical devices under conditions such

that a nitride layer forms on the at least one prosthetic device.

11 12

10

-15-